Federal Democratic Republic of Ethiopia

☞ EDICT OF GOVERNMENT ☜

In order to promote public education and public safety, equal justice for all, a better informed citizenry, the rule of law, world trade and world peace, this legal document is hereby made available on a noncommercial basis, as it is the right of all humans to know and speak the laws that govern them.

```
ET ISO 15928-1 (2003) (English):
Houses -- Description of performance --
Part 1: Structural safety
```

ISO INSIDE

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

ETHIOPIAN STANDARD

ES ISO 15928-1:2012

First edition

Houses — Description of performance — Part 1: Structural safety

(Identical with ISO 15928-1:2003)

ICS: 91.040.01; 91.080.01

Published by Ethiopian Standards Agency

©ESA

Foreword

This Ethiopian Standard has been prepared under the direction of the Technical Committee for Building structures and elements of building (TC 42) and published by the Ethiopian Standards Agency (ESA).

The standard is identical with ISO 15928-1 Houses – Description of performances – part 1: Structural Safety published by International organization for standardization(ISO).

For the purpose of this Ethiopian Standard , the adopted text shall be modified as follows.

- The phrase “International Standard” shall be read as “Ethiopian Standard”; and
- A full stop (.) shall substitute comma (,) as decimal marker.

Houses — Description of performance —

Part 1: Structural safety

1 Scope

This part of ISO 15928 sets out a method for describing the structural safety performance of houses. It covers user needs, provides performance descriptions, establishes parameter descriptions, and outlines evaluation processes. It includes a description of permanent, imposed, wind, seismic, snow and other actions as well as structural resistance.

This part of ISO 15928 is intended for use in the evaluation of the design and construction of houses, in the international trading of houses or their sub-systems, and in developing risk-management tools for the protection of houses.

It describes the structural safety of a house as a whole.

Annex A includes background information on this part of ISO 15928, guidance on its use, and suggestions on good practice.

Details on references referred to in Notes are provided in a Bibliography.

NOTE Structural serviceability, durability and other attributes will be covered in future parts of ISO 15928.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2394:1998, *General principles on reliability for structures*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2394 and the following apply.

3.1
basic ground snow depth
ground snow depth for a particular site before modifications are made for surrounding environment

3.2
basic wind speed
wind speed at a specified height and a specified terrain for a particular site before modifications are made for surrounding environment

3.3
house
building occupied for residential purposes which may be separated or linked horizontally, but not linked vertically, which has its own access and does not share any common space

3.4
load
value of a force corresponding to an action

3.5
parameters (structural)
group of variables used to quantitatively describe the structural safety performance

NOTE Structural parameters consist of variables describing

- magnitudes of the actions,
- magnitudes of structural resistance, and
- other conditions that may affect the structural safety performance.

3.6
performance
behaviour of houses related to users' needs

3.7
structural safety performance
behaviour of houses under possible actions related to human lives

NOTE In the above definitions, “action” is defined as in ISO 2394.

4 Structural safety performance

4.1 User needs

The risk of collapse or other kind of severe damage resulting from structural failure, which may affect the life safety of the house occupants in the house, or people in its vicinity, shall not exceed a level acceptable to the user.

4.2 Performance description

The performance description is the capacity of the whole house and its parts, with an appropriate degree of reliability, to maintain their strength and stability under all actions likely to occur during its design working life.

NOTE 1 The appropriate degree of reliability can be judged with due regard to the possible consequences of failure and the expense level of effort and procedures necessary to reduce the risk of failure. Aspects that are important in achieving the proper degree of reliability include choice of structural systems, design and analysis, durability design, quality control, maintenance and protective measures.

NOTE 2 In addition, it is expected that the house would not be damaged by unexpected events, such as explosion, impact or consequences of human error, to an extent disproportionate to the original cause.

NOTE 3 Likely actions may include those arising from soil/structure interaction, probable ground movements, compatibility of connections between subsystems and the effects of openings.

NOTE 4 For the purposes of this part of ISO 15928, the durability of materials are not considered to have a bearing on the structural performance of the house.

©ESA

4.3 Principles for describing structural safety performance

The structural safety performance may be described by nominating the structural actions on the house and the resistance of the structure under the effect of those actions.

5 Parameters for the description of performance

5.1 Parameters for describing actions

5.1.1 Permanent actions

The permanent actions other than self-weight are described by the magnitude(s) in kilonewtons and the location(s) of the imposed load(s).

5.1.2 Imposed actions

The imposed actions are described by the representative values of one or more of

a) a uniformly distributed floor or roof load, in kilopascals,

b) a concentrated floor or roof load, in kilonewtons, over a specified area, in square metres,

c) a concentrated wall impact load, in kilonewtons, applied at a specified height, in metres, above the floor; and

d) a uniformly distributed horizontal line load, in kilonewtons per metre, applied at a specified height, in metres, above the floor.

NOTE 1 ISO 2103 [1] provides minimum recommended imposed actions for different types of use and occupancy.

NOTE 2 An example of d) is the load on a hand rail.

5.1.3 Wind actions

Wind actions are described by the representative value of the wind velocity, in metres per second, derived from the basic wind speed, factored as appropriate to take into account local effects, terrain, shielding, topography, altitude, etc., based on one of the following wind velocity types:

a) 3-s gust;

b) 1-min mean;

c) 10-min mean;

d) hourly mean.

The effect of windborne debris on internal pressures should be considered.

NOTE Refer to ISO 4354 [2] for details on the conversion of wind velocity to wind forces and conversion between different types of wind velocity.

5.1.4 Seismic actions

Seismic actions are described by stating the representative value of one of the following parameters:

a) the effective peak ground acceleration, expressed as a fraction of gravity;

b) the base shear coefficient;

c) the ground acceleration response spectrum for the site.

The proportion of the imposed loads to be included in the seismic mass shall also be nominated.

The representative value shall be based on a consideration of the seismic activity, the soil characteristics of the construction site and the response behaviour of the structure.

NOTE ISO 3010 [3] provides additional information on seismic action on structures.

5.1.5 Snow actions

The snow actions are described by stating the representative values of

a) the ground snow depth, in metres, derived from the basic snow depth, factored to take into account local effects such as terrain, shielding, topography, etc.,

b) the snow density, in kilograms per cubic metre, i.e. the density to be used in converting the ground snow depth into a load, and

c) the duration, in days per year.

NOTE ISO 4355 [4] provides information on the conversion of ground snow depths to roof snow loads.

5.1.6 Other actions

Consideration shall be given to the description of other actions arising from floods, tornados, tsunamis, potentially unstable sites, windborne debris, temperature, impact, explosion, etc., if these actions are likely to affect the structural safety of the house.

5.1.7 Combinations of actions

Consideration shall be given to the description of the combinations of the actions to account for the probability of simultaneous occurrence of two or more actions.

5.2 Parameters for describing structural resistance

5.2.1 General

The resistance of the structure under the effects of the actions can be described in terms of limit state criteria or allowable stress criteria for materials with recognized engineering properties in accordance with 5.2.2 or 5.2.3 and ISO 2394 where appropriate. Materials without recognized engineering properties may be described in accordance with ISO 2394.

NOTE Reference should be made to relevant International Standards when available.

5.2.2 Resistance based on limit state criteria

The following information shall be provided:

a) strength reduction factor (resistance factor or partial safety factors);

b) characteristic material strengths;

c) testing methods from which the characteristic material strengths are determined.

©ESA

5.2.3 Resistance based on allowable stress criteria

The following information shall be provided:

a) factor of safety for stress criteria;

b) characteristic material strengths;

c) testing methods from which the characteristic strengths are determined.

6 Evaluation

6.1 General

Evaluation may be carried out by

a) analysis,

b) testing,

c) service experience, or

d) a combination of the above.

NOTE The characteristic values of material properties used for analysis should be derived from International or other appropriate test standards.

6.2 Analysis

Action effects on individual structural members shall be determined by methods of structural analysis that take into account equilibrium, general stability, geometric compatibility, and both short- and long-term material properties. Members that tend to accumulate residual deformations under repeated service loads shall have included in their analysis the added eccentricities expected to occur during the design working life.

6.3 Testing

Testing shall incorporate a realistic representation of materials, loading conditions, boundary conditions and construction practices. Testing for evaluating structural response shall be full scale unless all scale effects can be appropriately estimated.

NOTE See ISO 2394:1998, Annex D, for the use of testing in design.

6.4 Service experience

Service experience shall comprise a sufficient number of representative examples, exposed to similar or more severe service conditions, together with adequate documentation.

6.5 Combination

A combination of analysis, testing and service experience may be used for evaluation. Simplified analytical procedures using a combination of testing and service experience may be used.

Annex A
(informative)

Commentary

A.1 Scope

The purpose of this part of ISO 15928 is to standardize the method of describing the structural safety performance for houses; i.e. to standardize the parameters by which the structural safety aspects of housing performance are expressed or defined. It does not specify a level of performance and it is not intended to provide design method and/or criteria.

It is one part of a series of International Standards designed to facilitate the communication between the specifier (buyer/user) and the provider (seller), the regulator and the standards-preparer. Other attributes are covered in other parts of ISO 15928.

The intent is to provide a standardized system that is to be used to realise performance description.

The objectives of this part of ISO 15928 are as follows:

a) to facilitate international trade in housing systems and housing products and to exchange housing information by eliminating technical barriers;

b) to facilitate innovation in housing by providing a systematic framework for evaluation and acceptance;

c) to establish user needs related to structural safety in specific technical engineering terms in order to facilitate communication among all stakeholders.

This part of ISO 15928 may also be useful in increasing consumer product awareness and in the development of appropriate international insurance protection for houses.

A.2 Normative references

The fact that ISO 2394 is cited here means that it is necessary to consult this document.

A.3 Terms and definitions

In general, the adopted definitions are those given in ISO 6240 [5], ISO 6241 [6] with regard to performance, and ISO 2394 with regard to structural terms, except for the following terms that require further elaboration.

a) *Action and load:* the term “action” is used to indicate the agent that affects the structural performance and the term “load” is used when the action is quantified.

b) *Design value of an action:* value obtained by multiplying the representative value by the appropriate load factor.

c) *Representative value of an action:* ISO 2394 defines representative values as “the values used for verification of a limit state which consist of characteristic values, combination values but may also consist of other values”. In this part of ISO 15928, the word is used to designate the value used as reference for the description of performance.

©ESA

d) *Load combination:* set of design values used for the verification of a design under the simultaneous influence of different actions.

e) *Load factor:* the factor by which the representative value of an action is multiplied to give the design value for a particular load combination.

A.4 Structural safety performance

A.4.1 User needs

The users' needs for structural safety are thought of in terms of the safety of people. Those inside the house may be injured by structural collapse and those in the vicinity of the house may be injured by flying debris as the result of structural failure. Properties are also protected to a certain extent by reducing the risk of structural failure. The acceptable level of performance may vary from user to user and will depend on user expectations.

A.4.2 Performance description

Safety is considered in relation to the strength and stability of the structure. The structural serviceability and durability characteristics, including maintenance, are considered in separate standards.

The performance objectives are the same as those stated in ISO 2394. The objective corresponds to the maximum load-carrying capacity and the overall stability of the house.

Unexpected events (in Note 2 of 4.2) can be handled in a variety of ways, such as reducing the hazard, appropriate structural form, appropriate detailing, or a combination of these. Such measures will provide stability to the entire structural system by transferring the loads from any damaged region to adjacent regions capable of resisting the loads without collapse. This can be accomplished by providing sufficient continuity, redundancy or energy dissipating capacity, or a combination thereof.

A.4.3 Principles for describing structural safety performance

Structural safety performance can be described by nominating the structural reliability in accordance with ISO 2394. However, this is of little practical use for designers or for facilitating trade. The method of describing structural safety performance by nominating the actions and the limits on the response of the structure under the effects of those actions is more practical.

The specifier will first nominate a representative value for each of the actions and other parameters that affect safety performance. The representative value is normally a characteristic value. This value together with the load factor will describe the load level to be used in design. For example, the specifier may choose to select a 500 or 1 000 year return value as the representative value for wind action and a load factor of 1,0 for ultimate limit states. Alternatively, the specifier might choose a 50 year return value as the representative value and a load factor of, say, 1,3 or 1,5 for the ultimate limit state if Limit State Design is used or a load factor of 1,0 for Allowable Stress Design.

Table A.1 illustrates the relationship between the agents, the representative values of the parameters, the representative values of the actions and the design values of the actions.

Table A.1 — Examples of agents, parameters, representative and design values

Agent	Performance parameter	Representative value of the action	Design value for safety (Ultimate Limit States)	Design value for safety (Allowable Stress Design)
Imposed actions	Q (kPa or kN)	Q	$\gamma_Q Q$	Q
Wind actions	V (m/s)	W_{50}, W_{500}	$\gamma_W W_{50}$ or $\gamma_W W_{500}$	W_{50}
Seismic actions	A (m/s^2)	E_{500}, E_{100}	$\gamma_E E_{100}$ or $\gamma_E E_{500}$	E_{100}
Snow actions	D_G, ρ (kg/m^3)	S_{20}	$\gamma_S S_{20}$	S_{20}

W_{50}, W_{500} are the 50 and 500 year return values for the wind load, respectively.

E_{100}, E_{500} are the 100 and 500 year return values for the seismic load, respectively.

S_{20} is the 20 year return value for the snow load.

A.5 Parameters for the description of performance

A.5.1 Parameters for describing action

NOTE This clause describes the parameters, defining the actions, that the specifier needs to supply to the provider. It is not concerned with the design issues that are wholly controlled by the designers. Other actions that need to be considered in design such as self weight, etc. are therefore not mentioned here. Some national specifications may use different parameters for the description of the actions; these could still be used provided that they can be converted into the parameters adopted in this part of ISO 15928.

A.5.1.1 Permanent actions

This subclause is intended for specific permanent loads that need to be specified (e.g. water tank, chandelier). Their exact locations should also be specified.

A.5.1.2 Imposed actions

ISO 2103 provides representative values for minimum recommended imposed loads for different types of use and occupancy. There is no International Standard for specifying impact load at present but there are International Standards for impact testing (e.g. ISO 7892) [7].

A.5.1.3 Wind actions

Wind speed has been chosen as the parameter to represent wind action. The alternative is free-stream dynamic wind pressure; however, it is possible to convert one to the other. The representative value of the wind speed is the value of wind speed with appropriate modifications to account for the local conditions such as terrain or shielding. This approach is necessary because different methods have been used in national codes to allow for local conditions. The representative value can be expressed in one of a number of types of wind speed. ISO 4354 provides the conversion factor between different types of wind speed as well as the process to convert wind speeds into wind forces.

A.5.1.4 Seismic actions

There are various ways of describing seismic action. Peak ground acceleration and base shear coefficient are the most common ways. The representative values of these parameters should be chosen with appropriate consideration to account for the particular load conditions, such as seismicity of the region, soil characteristics of the site and the importance of the building. The dynamic property of the structure, however, is the responsibility of the provider. This approach is necessary because different methods have been used in national codes to allow for these conditions. The approach is consistent with the guidelines given in ISO 3010.

A.5.1.5 Snow actions

Ground snow depth and snow density have been chosen as the parameters to represent snow actions. The representative value for ground snow depth is the value of ground snow depth with appropriate modifications to account for the local conditions, such as shielding, zoning. This approach is necessary because different methods have been used in national codes to allow for these conditions. The representative value for snow density is the average snow density value used to convert snow depth into snow load. This approach is consistent with ISO 4355.

A.5.1.6 Other actions

These include the following.

a) Unstable sites

This parameter mainly affects the design of the foundation, but may have consequences on the overall performance of the house. Failure may also be caused by landslides, but this is not normally considered as being within the scope of structural safety and is treated as a planning issue.

b) Flood

The flood height above ground and the flood flow speed can be used as the parameters to represent flood actions. The control of house building in flood-prone regions is generally treated as a planning issue. However, if house building is permitted in flood prone regions, then the above parameters will permit the provider to evaluate the structural consequence of flooding. Other parameters, such as frequency of flooding, may be relevant to other attributes such as durability, but not to structural safety.

A.5.1.7 Combinations of actions

The combinations of actions will be dependent on the chosen design criteria, as follows.

a) Limit state criteria

For example, the following action combinations, incorporating nominated load factors γ_1 to γ_{15}, as appropriate, are normally considered:

— $\gamma_1 G$

— $\gamma_2 G + \gamma_3 Q + (\gamma_4 S)$

— $\gamma_5 G + (\gamma_6 W$ or $\gamma_7 E)$

— $\gamma_8 G + \gamma_9 Q + (\gamma_{10} S) + (\gamma_{11} W$ or $\gamma_{12} E)$

— $\gamma_{13} G - (\gamma_{14} W$ or $\gamma_{15} E)$.

b) Allowable stress criteria

For example, the following load combinations are normally considered:

- G
- $G + Q + (S)$
- $G + (W \text{ or } E)$
- $G + Q + (S) + (W \text{ or } E)$

where

E is the seismic load;

G is the permanent (dead) load;

Q is the imposed (live) load;

S is the snow load;

W is the wind load;

γ_1 to γ_{15} are the load factors for safety.

A.5.2 Parameters for describing structural resistance

A.5.2.1 Resistance based on limit state criteria

The ultimate limit states relating to structural safety are described in ISO 2394 in terms of criteria for strength and/or deformation as well as stability. The limit state of strength and deformation, respectively, is defined in terms of maximum load-carrying capacity of the components and a certain limiting deformation. Usually, the limit state criteria consist of strength reduction factors and characteristic strengths. The strength reduction factors will reflect the degree of reliability and hence the level of structural performance of the house, as do the load factors stated in A.5.1.7a). The characteristic strength of a structure or a component is determined from the characteristic material strengths. It is therefore important to specify these and the test methods from which the characteristic strength are determined.

A.5.2.2 Resistance based on allowable stress criteria

The allowable stress criteria are described by stating the factor of safety, the characteristic material strengths and the method of testing from which the characteristic material strengths are determined. These require consultation between the specifier and the provider concerning material selection, in order that appropriate allowable stresses can be specified. Usually, the allowable stress value is equal to the characteristic material strength divided by the factor of safety. The specifier should also select a factor of safety for overall stability consideration.

As allowable stress design is not recommended in ISO 2394, it is recommended that such designs be calibrated against the appropriate ISO limit states design

A.6 Evaluation

A.6.1 General

The specifier should indicate the method required for evaluation, usually a combination of analysis and testing. Since this part of ISO 15928 is concerned mainly with the description of performance, the actual criteria to be used in evaluation are not part of it and are included in this commentary for information only.

A.6.2 Analysis

a) Evaluation using limit state criteria

For satisfactory structural safety performance, the house should meet both stability, and strength and deformation, criteria.

1) Stability

When considering a limit state of static equilibrium or of gross displacements or deformations of the structure, the criterion is

$$\mathrm{E}_{\mathrm{st}} > \mathrm{E}_{\mathrm{dst}}$$

where

E_{st} is the design effect of stabilizing actions which includes the factored stabilizing part of the permanent action and any design resistance;

E_{dst} is the design effect of destabilizing actions which includes the factored destabilizing parts of the appropriate actions.

2) Strength and deformation

When considering a limit state of rupture or excessive deformation of a section, member or connection, the criterion is

$$R_{\mathrm{d}} > E_{\mathrm{d}}$$

where

R_{d} is the design resistance;

E_{d} is the design action effect.

b) Evaluation using allowable stress criteria

For satisfactory structural safety performance, the house must meet both stability and static strength criteria.

1) Stability

When considering the state of static equilibrium, the criterion is

$$E_{\mathrm{st}} > S_{\mathrm{F}}\, E_{\mathrm{dst}}$$

where

E_{st} is the design effect of stabilizing actions which includes the stabilizing part of the permanent action and any design resistance;

E_{dst} is the design effect of destabilizing actions which includes the destabilizing parts of the appropriate actions;

S_F is the safety factor for overturning stability.

2) Strength

When considering the state of strength of a section, member or connection, the criterion is, at all points in the structure

$$F_{act} > F_{all}$$

where

F_{act} is the actual stress;

F_{all} is the allowable stress.

A.6.3 Testing

Testing may include the testing of the whole house or the testing of a specific component. Guidance for testing can be found in ISO 2394:1998, Annex D. Since most of the components in a house are not large, full-scale testing is preferred. If prototype testing is used, consideration should be given to the effects of variability in the evaluation of the test results.

A.6.4 Service experience

Evaluation may be based on experience of similar cases and conditions or compliance with well-established solutions. The judgement should be as objective as possible by application of strict rules. The decision-making process, the procedure used, and the factors taken into account should be documented in such a way that this process can be reconstructed if necessary

Annex B
(informative)

Structural safety performance checklist

B.1 Design method

a) Limit State Design (LSD) [ ]

b) Allowable Stress Design (ASD) [ ]

B.2 Design loads

B.2.1 Permanent loads other than self-weight

Magnitude (kN) (…..………..)

Location (show plan) (……………)

B.2.2 Imposed load (live load)

a) Uniform floor or roof road

— uniformly distributed load (kPa) (…..………..)

b) Concentrated floor or roof load

— concentrated (kN) (…..………..)

— over a specified area of (m^2) (…..………..)

c) Wall load

— impact load on walls (kN) (…..………..)

— applied height above the floor (m) (…..………..)

d) Line load (for hand rails, etc.)

— horizontal line load (kN/m) (…..………..)

— applied height above the floor (m) (…..………..)

B.2.3 Wind load

Type of wind speed:

a) 3-s gust [ ]

b) 1-min mean [ ]

c) 10-min mean [ ]

d) hourly mean [ ]

Representative value of wind speed (m/s) (….……….)

B.2.4 Seismic load

a) Type of parameter

- peak ground acceleration (as % of gravity) [ ]
- base shear coefficient [ ]
- horizontal force (kN) [ ]
- ground acceleration spectrum [ ]

b) Representative value (….……….)

B.2.5 Snow load

a) Ground snow depth (m) (….……….)

b) Snow density (kg/m^3) (….……….)

c) Duration (days/year) (….……….)

B.2.6 Other actions

a) Flood (….……….)

b) Unstable sites (….……….)

c) Windborne debris (….……….)

d) Tornados (….……….)

e) Other (….……….)

NOTE These actions are at present not covered by this part of ISO 15928. Additional information will need to be provided.

B.3 Design criteria

B.3.1 Load combinations

B.3.1.1 Notation

G is the dead load

Q is the imposed (live) load

S is the snow load (or roof live load or rain/hail load as appropriate) is the wind load

E is the earthquake load

B.3.1.2 For LSD: ultimate limit states

$\gamma_1 G$

$\gamma_2 G + \gamma_3 Q + (\gamma_4 S)$

$\gamma_5 G + (\gamma_6 W$ or $\gamma_7 E)$

$\gamma_8 G + \gamma_9 Q + (\gamma_{10} S) + (\gamma_{11} W$ or $\gamma_{12} E)$

$\gamma_{13} G - (\gamma_{14} W$ or $\gamma_{15} E)$

Provide appropriate values for load factors γ_1 to γ_{15}.

B.3.1.3 For ASD: load combinations

G

$G + Q + (S)$

$G + (W$ or $E)$

$G + Q + (S) + (W$ or $E)$

B.3.2 Design limits

B.3.2.1 For LSD

a) Strength reduction factors.

b) Characteristic material strength.

c) Testing methods to be used in determining the characteristic strength.

B.3.2.2 For ASD

a) Factors of safety for stress criteria and for stability.

b) Characteristic material strength.

c) Testing methods to be used in determining the characteristic strength.

Bibliography

[1] ISO 2103:1986, *Loads due to use and occupancy in residential and public buildings*

[2] ISO 4354:1997, *Wind actions on structures*

[3] ISO 3010:1988, *Bases for design of structures — Seismic actions on structures*

[4] ISO 4355:1998, *Bases for design of structures — Determination of snow loads on roofs*

[5] ISO 6240:1980, *Performance standards in building — Contents and presentation*

[6] ISO 6241:1984, *Performance standards in building — Principles for their preparation and factors to be considered*

[7] ISO 7892:1988, *Vertical building elements — Impact resistance tests — Impact bodies and general test procedures*

የኢትዮጵያ የደረጃዎች ኤጀንሲ
Ethiopian Standards Agency

DRAFT

Organization and Objectives

The Ethiopian Standards Agency (ESA) is the national standards body of Ethiopia established in 2010 based on regulation No. 193/2010.ESA is established due to the restructuring of Quality and Standards Authority of Ethiopia (QSAE) which was established in 1970.

ESA's objectives are:-

- Develop Ethiopian standards and establish a system that enable to check weather goods and services are in compliance with the required standards,
- Facilitate the country's technology transfer through the use of standards,
- Develop national standards for local products and services so as to make them competitive in the international market.

Ethiopian Standards

The Ethiopian Standards are developed by national technical committees which are composed of different stakeholders consisting of educational Institutions, research institutes, government organizations, certification, inspection, and testing organizations, regulatory bodies, consumer association etc. The requirements and/ or recommendations contained in Ethiopian Standards are consensus based that reflects the interest of the TC representatives and also of comments received from the public and other sources. Ethiopian Standards are approved by the National Standardization Council and are kept under continuous review after publication and updated regularly to take account of latest scientific and technological changes.
Orders for all Ethiopian Standards, International Standard and ASTM standards, including electronic versions, should be addressed to the Documentation and Publication Team at the Head office and Branch (Liaisons) offices. A catalogue of Ethiopian Standards is also available freely and can be accessed in from our website.

ESA has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of ESA.
International Involvement
ESA, representing Ethiopia, is a member of the International Organization for Standardization (ISO), and Codex Alimentarius Commission (CODEX). It also maintains close working relations with the international Electro-technical Commission (IEC) and American Society for Testing and Materials (ASTM).It is a founding member of the African Regional Organization for standardization (ARSO).

More Information?
Contact us at the following address.
The Head Office of ESA is at Addis Ababa.

☎ ***011- 646 06 85, 011- 646 05 65***
📠 ***011-646 08 80***
✉ ***2310 Addis Ababa, Ethiopia***
E-mail: info@ethiostandards.org,
Website: www.ethiostandards.org

Standard Mark